

In the Claims¹

1-13. (Previously cancelled)

14. (Currently amended) An adeno-associated virus vector comprising a nucleotide sequence encoding a fusion polypeptide, the fusion polypeptide comprising:

a structural papillomavirus polypeptide encoded by a structural papillomavirus gene an open reading frame selected from the group consisting of L1-ORF, L2-ORF and fragments thereof of any of the foregoing ORFs; and

an non-transforming early papillomavirus polypeptide encoded by an early papillomavirus gene open reading frame selected from the group consisting of: E6-ORF, E7-ORF and fragments thereof, of any of the foregoing ORFs, wherein said early papillomavirus polypeptides or fragments thereof are non-transforming, and wherein the 3' end of the structural papillomavirus gene ORF is ligated to the 5' end of the early papillomavirus gene a non-transforming ORF to encode for the fusion polypeptide having a C-terminus of the structural papillomavirus polypeptide connected to a N-terminus of the non-transforming early papillomavirus polypeptide non-transforming polypeptide.

15. (Original) The vector of claim 14, wherein the structural papillomavirus polypeptide is an HPV polypeptide.

16. (Original) The vector of claim 15, wherein the HPV is selected from the group consisting of HPV 16, HPV 18, HPV 33, HPV 35 and HPV 45.

17. (Currently amended) The vector of claim 14, wherein the non-transforming early papillomavirus polypeptide is an HPV polypeptide.

¹ Consistent with the holding of Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., et al., 535 U.S. 722, 152 F.3d 944 (2002), decided May 28, 2002, any amendments herein that hereafter are deemed to be narrowing amendments by a court of competent jurisdiction in a final unappealed or unappealable decision, are not intended to relinquish any scope of equivalents unforeseeable at the time of this amendment or that relate to aspects of the invention having only a peripheral relation to the basis for the amendment.

18. (Original) The vector of claim 17, wherein the HPV is selected from the group consisting of HPV 16, HPV 18, HPV 33, HPV 35 and HPV 45.
19. (Currently amended) The vector of claim 14 wherein, both the structural papillomavirus polypeptide and the non-transforming early papillomavirus polypeptide are HPV polypeptides.
20. (Original) The vector of claim 19, wherein the HPV is selected from the group consisting of HPV 16, HPV 18, HPV 33, HPV 35 and HPV 45.
21. (Original) The vector of claim 14, wherein the nucleotide sequence is under the control of a constitutive promoter.
22. (Original) The vector of claim 14, wherein the nucleotide sequence is under the control of an inducible promoter.
23. (Original) The vector of claim 14, wherein the nucleotide sequence is under the control of a tissue-specific promoter.
24. (Original) The vector of claim 14, wherein the nucleotide sequence is under the control of a tumor-specific promoter.
25. (Original) The vector of claim 14, wherein the structural papillomavirus polypeptide is encoded by L1-ORF.
26. (Previously cancelled)
27. (Original) The vector of claim 14, wherein the structural papillomavirus polypeptide is encoded by L2-ORF.
28. (Previously cancelled)

29. (Original) The vector of claim 14, wherein the structural papillomavirus polypeptide is encoded by HPV 16 L1 ORF.

30-37. (Previously cancelled)

38. (Currently amended) The vector of claim 14, wherein the non-transforming early papillomavirus polypeptide is encoded by non-transforming E6-ORF.

39. (Currently amended) The vector of claim 14, wherein the non-transforming early papillomavirus polypeptide is encoded by a fragment of non-transforming E6-ORF.

40. (Currently amended) The vector of claim 14, wherein the non-transforming early papillomavirus polypeptide is encoded by non-transforming E7-ORF.

41. (Currently amended) The vector of claim 14, wherein the non-transforming early papillomavirus polypeptide is encoded by a fragment of non-transforming E7-ORF.

42. (Currently amended) The vector of claim 14, wherein the non-transforming early papillomavirus polypeptide is encoded by HPV 16 non-transforming E6-ORF.

43. (Currently amended) The vector of claim 14, wherein:
the non-transforming early papillomavirus polypeptide is encoded by non-transforming E6-ORF or a fragment thereof; and
the structural papillomavirus polypeptide is encoded by L2-ORF or a fragment thereof.

44. (Currently amended) The vector of claim 14 wherein:
the non-transforming early papillomavirus polypeptide is encoded by HPV 16 non-transforming E7-ORF or a fragment thereof; and
the structural papillomavirus polypeptide is encoded by HPV 16 L2-ORF or a fragment thereof.

45. (Currently amended) The vector of claim 14 wherein:
the non-transforming early papillomavirus polypeptide is encoded by HPV 16 non-transforming E6-ORF or a fragment thereof; and
the structural papillomavirus polypeptide is encoded by HPV 16 L2-ORF or a fragment thereof.

46. (Currently amended) The vector of claim 14 wherein:
the non-transforming early papillomavirus polypeptide is encoded by HPV 16 non-transforming E7-ORF or a fragment thereof; and
the structural papillomavirus polypeptide is encoded by HPV 16 L2-ORF or a fragment thereof.

47. (Currently amended) The vector of claim 14 wherein:
the non-transforming early papillomavirus polypeptide is encoded by HPV 18 non-transforming E6-ORF or a fragment thereof; and
the structural papillomavirus polypeptide is encoded by HPV 18 L2-ORF or a fragment thereof.

48. (Currently amended) The vector of claim 14 wherein:
the non-transforming early papillomavirus polypeptide is encoded by HPV 18 non-transforming E7-ORF or a fragment thereof; and
the structural papillomavirus polypeptide is encoded by HPV 18 L2-ORF or a fragment thereof.

49. (Currently amended) An adeno-associated virus vector comprising a nucleotide sequence encoding a fusion polypeptide, the fusion polypeptide comprising:

a structural human papillomavirus polypeptide encoded by a structural papillomavirus gene an open reading frame selected from the group consisting of L1-ORF and L2-ORF; and

~~an~~ non-transforming early human papillomavirus polypeptide encoded by an early papillomavirus gene open reading frame selected from the group consisting of: E6-ORF and E7-ORF, wherein said early human papillomavirus polypeptides are non-transforming, and wherein the 3' end of the structural papillomavirus gene ORF is ligated to the 5' end of the early papillomavirus gene a non-transforming ORF to encode for the fusion polypeptide having a C-terminus of the structural

human papillomavirus polypeptide connected to a N-terminus of the non-transforming early human papillomavirus polypeptide.

50. (Currently amended) An adeno-associated virus vector comprising a nucleotide sequence encoding a fusion polypeptide of a human papillomavirus, the fusion polypeptide comprising:

a structural human papillomavirus polypeptide encoded by ~~an~~ structural open reading frame (ORF) selected from the group consisting of L1-ORF and L2-ORF; and

~~an~~ non-transforming early human papillomavirus polypeptide encoded by an early open reading frame (ORF) selected from the group consisting of: E6-ORF and E7-ORF, ~~wherein~~ said early human papillomavirus peptides are non-transforming, and wherein the 3' end of the structural ORF is ligated to the 5' end of ~~a non-transforming~~ the early ORF to encode for the fusion polypeptide having a C-terminus of the structural human papillomavirus polypeptide connected to a N-terminus of the non-transforming early human papillomavirus polypeptide, and wherein the human papillomavirus ~~of (a) and (b)~~ is selected from the group consisting of HPV 16, HPV 18, HPV 33, HPV 35 and HPV 45.

51. (Currently amended) An adeno-associated virus vector comprising a nucleotide sequence encoding a fusion polypeptide, the fusion polypeptide comprising:

a structural human papillomavirus polypeptide encoded by L1-ORF ~~or a fragment thereof~~; and

~~an~~ non-transforming early human papillomavirus polypeptide encoded by an early open reading frame ORF selected from the group consisting of: a fragment of E6-ORF and a fragment of E7-ORF and wherein the 3' end of the L1-ORF ~~structural ORF~~ is ligated to the 5' end of the early ~~a non-transforming~~ ORF to encode for the fusion polypeptide having a C-terminus of the structural human papillomavirus polypeptide connected to a N-terminus of the non-transforming early human papillomavirus polypeptide.

52. (Currently cancelled)

53. (Currently amended) An adeno-associated virus vector comprising a nucleotide sequence encoding a fusion polypeptide, the fusion polypeptide comprising:

(a) a structural human papillomavirus polypeptide encoded by HPV16 or 18 structural L1-ORF; and

(b) an non-transforming early human papillomavirus polypeptide encoded by an HPV 16 or 18 early open reading frame (ORF) selected from the group consisting of: E6-ORF and E7-ORF, ~~wherein said early papillomavirus polypeptides are non-transforming, and wherein the 3' end of the structural L1-ORF is ligated to the 5' end of a non-transforming the HPV 16 or 18 early ORF to encode for the fusion polypeptide having a C-terminus of the structural human papillomavirus polypeptide connected to a N-terminus of the non-transforming early human papillomavirus polypeptide.~~

54. (Original) The vector of claim 53, wherein the ORFs of (a) and (b) are HPV 16 ORFs.

55. (Original) The vector of claim 53, wherein the ORFs of (a) and (b) are HPV 18 ORFs.

56. (Currently amended) The vector of claim 53 wherein:

the ORFs of 53(a) and 53(b) are HPV 16 ORFs; and

the non-transforming early human papillomavirus polypeptide is encoded by E6-ORF.

57. (Currently amended) The vector of claim 53 wherein:

the ORFs of 53(a) and 53(b) are HPV 18 ORFs; and

the non-transforming early human papillomavirus polypeptide is encoded by E6-ORF.

58. (Currently amended) The vector of claim 53 wherein:

the ORFs of 53(a) and 53(b) are HPV 16 ORFs; and

the non-transforming early human papillomavirus polypeptide is encoded by E7-ORF.

59. (Currently amended) The vector of claim 53 wherein:
the ORFs of 53(a) and 53(b) are HPV 18 ORFs; and
the non-transforming early human papillomavirus polypeptide is encoded by E7-ORF.

60. (Original) A vaccine composition comprising:
the vector of claim 14; and
an auxiliary agent.

61. (Original) The vaccine composition of claim 49, further comprising one or more immune system-activating agents.

62-64. (Previously cancelled)

65. (Currently amended) A method for activating an immune system of a subject comprising administering to the subject an adeno-associated virus vector comprising a nucleotide sequence encoding a fusion polypeptide, the fusion polypeptide comprising:
a structural papillomavirus polypeptide encoded by an structural open reading frame (ORF) selected from the group consisting of: L1-ORF, L2-ORF and fragments thereof of any of the foregoing ORFs; and
an non-transforming early papillomavirus polypeptide encoded by an early open reading frame (ORF) selected from the group consisting of: E6-ORF, E7-ORF and fragments thereof, of any of the foregoing ORFs, wherein said early papillomavirus polypeptides are non-transforming, and wherein the 3' end of the structural ORF is ligated to the 5' end of a non-transforming the early ORF to encode for the fusion polypeptide having a C-terminus of the structural papillomavirus polypeptide connected to a N-terminus of the non-transforming early papillomavirus polypeptide.

66. The method of claim 65, wherein the fusion polypeptide is administered as a component of a vaccine composition.